

An Object Configuration Similarity Approach to Georegistration, Phase I

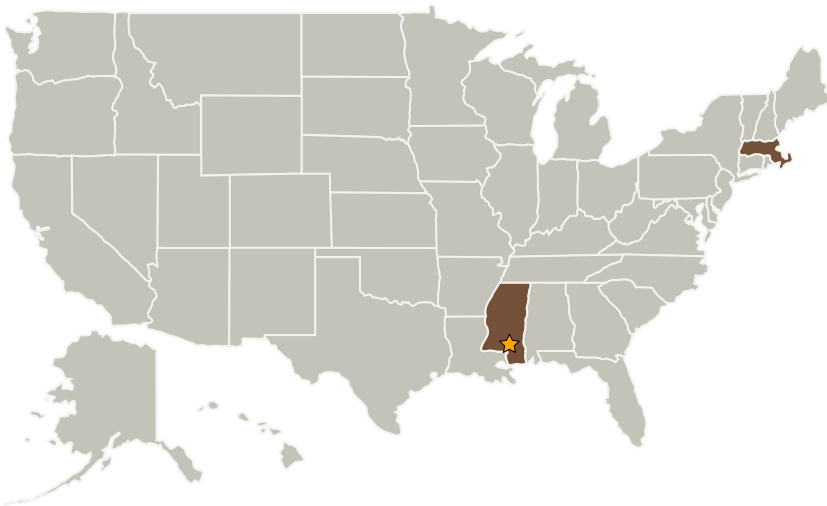
Completed Technology Project (2005 - 2005)



Project Introduction

Conflation and co-registration are critical applications for NASA, especially for co-registration of datasets differing in scale, resolution, sensor spectrum range (e.g. optical with IR or thermal imagery). Traditional georegistration solutions in the geospatial, photogrammetric, and computer vision communities select a set of control features in an existing database and identify the same features in an incoming dataset. However, these registration algorithms are not robust due to variations in scale, resolution, and sensor characteristics, where the identification of control features becomes a complex and challenging process. Recent NASA sponsored innovations include Feature Analyst (FA) automation with a registration scheme that is along the lines of traditional tools (e.g. use few control features to co-register two datasets). Here, we propose a new approach based object configuration similarity. Our solution - a departure from traditional approaches - uses abstract spatial relations (e.g. three square buildings forming an orthogonal triangle with a river running between them) as matching features, and transforms the registration problem into a spatial similarity assessment problem. Our approach results in unparalleled pull-in range as coarse location data are adequate to support the recovery of registration information for a configuration.

Primary U.S. Work Locations and Key Partners



An Object Configuration Similarity Approach to Georegistration, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

An Object Configuration Similarity Approach to Georegistration, Phase I

Completed Technology Project (2005 - 2005)



Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Milcord LLC	Supporting Organization	Industry	Waltham, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Mississippi

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Peggy Agouris

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - └ TX16.5 Range Tracking, Surveillance, and Flight Safety Technologies